

CLAIMS

1. A device comprising first (10, 26, 32, 37, 55, 61, 70, 80) and second (11, 27, 33, 38, 56, 62, 71, 81) layers wherein:
 - 5 the first layer is flexible; and
 - the second layer is substantially flat and meanders across the plane of the first layer so as to prevent fracture of the second layer when the first layer is deformed.
- 10 2. A device according to claim 1, wherein the second layer is in contact with the first layer over substantially the whole of the length of the second layer.
3. A device according to claim 1 or 2, wherein the second layer comprises
 - 15 a plurality of interconnected portions (12, 13, 28, 29, 35, 39, 57, 63, 72, 82).
4. A device according to claim 3, wherein the portions are arranged in aligned sets, the portions being connected to one another so as to provide a continuous path between first and second ends of the second layer.
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5. A device according to claim 4, wherein the aligned sets are offset from one another.
6. A device according to claim 4 or 5, wherein the portions are connected
 - 25 to one another by a connecting element (15, 30, 40, 58, 64) that is narrower than the portions being connected.
7. A device according to claim 6, wherein the portions are aligned in a longitudinal direction and the connecting element (15, 30, 40, 58, 64) is
 - 30 disposed to be substantially perpendicular to said direction.

8. A device according to any one of claims 3 to 7, wherein the interconnected portions (12, 13, 39, 82), comprise rectangular portions.

9. A device according to any one of claims 4 to 8, wherein the portions
5 (12, 13, 28, 29, 35, 39, 63, 72) are connected to one another at their respective ends.

10. A device according to any one of claims 4 to 9, containing two aligned sets of interconnected portions (12, 13, 28, 29, 35).

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11. A device according to any one of claims 3 to 10, wherein the interconnected portions (28, 29, 35) comprise semi-circular portions.

12. A device according to any one of claims 3 to 9, wherein the
15 interconnected portions (12, 13, 39, 63, 72) comprise substantially quadrilateral portions.

13. A device according to any one of claims 3 to 6, wherein the interconnected portions (57) comprise substantially hexagonal portions.

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14. A device according to any one of claims 3 to 9, 12 and 13, wherein the interconnected portions (39, 57, 63, 72) are arranged in an array of interconnected portions.

25 15. A device according to any one of claims 12 to 14, wherein at least one of said interconnected portions is connected to three or more other portions.

16. A device according to claim 3, wherein the second layer (81) comprises a random arrangement of portions (82) connected to one another so as to
30 provide a continuous path between first and second ends of the second layer.

17. A device according to any one of claims 3 to 16, wherein each of the portions has a length, the portion length being selected to prevent fracture when the first layer is deformed to a predetermined radius of curvature.
- 5 18. A device according to claim 17, wherein the portion length is selected to be less than a predetermined length, the predetermined length being dependent on the average length between cracks (25) for a continuous layer deformed to the predetermined radius of curvature.
- 10 19. A device according to any one of the preceding claims, wherein the first layer is a substrate.
20. A device according to claim 19, wherein the substrate comprises polycarbonate.
- 15 21. A device according to any one of the preceding claims, wherein the second layer is a coating on the first layer.
22. A device according to claim 21, wherein the second layer comprises a transparent conductor.
- 20 23. A device according to claim 21 or 22, wherein the second layer comprises a conductive oxide.
- 25 24. A device according to claim 23, wherein the conductive oxide comprises indium tin oxide.
25. A device according to any one of claims 3 to 24, wherein the portions are interconnected to provide a continuous path for an electric current.
- 30 26. A device according to any one of the preceding claims, comprising a third layer covering a portion of said the second layer.

27. A device according to claim 26, wherein said third layer is Poly-3,4-Ethylenedioxythiophene.
- 5 28. A device according to any one of claims 3 to 27, comprising a display.
29. A device according to claim 28, comprising an electroluminescent display.
- 10 30. A device according to claim 28, comprising a foil display.
31. A device according to claim 28, comprising a liquid crystal display device.
- 15 32. A device according to claim 31, wherein each of the portions has a length, the portion length being dependent on the spacing and size of pixels in the liquid crystal display device.
33. A device according to claim 31 or 32, wherein the liquid crystal display
20 device comprises an active matrix device.
34. A device according to claim 31 or 32, wherein the liquid crystal display device comprises a passive matrix device.
- 25 35. A device according to claim 33, wherein the active matrix liquid crystal display device comprises a plurality of spaced apart pixels (85, 86, 87) and the second layer comprises an electrode (84) which is arranged to meander periodically between the pixels, the period of the meander being dependent on the pixel spacing.
- 30 36. A device according to claim 35, wherein the period of the meander is an integer multiple of the pixel spacing.

37. A device according to any one of the preceding claims, wherein the second layer comprises a brittle material.

5 38. A method of fabricating a device comprising first (10, 26, 32, 37, 55, 61, 70, 80) and second (11, 27, 33, 38, 56, 62, 71, 81) layers wherein the first layer is flexible and the second layer is substantially flat and meanders across the plane of the first layer so as to prevent fracture of the second layer when the first layer is deformed, the second layer comprising a plurality of
10 interconnected portions (12, 13, 28, 29, 35, 39, 57, 63, 72, 82) each having a portion length, the method including selecting the portion length to prevent fracture when the first layer is deformed to a predetermined radius of curvature.

15 39. A method according to claim 38, further comprising determining a spacing between fractures (25) for a continuous layer (24) of material when deformed to a predetermined radius of curvature, and selecting the portion length to be a value that is dependent on the determined spacing.

20 40. A method according to claim 39, comprising determining an average spacing between the fractures (25).

41. A device comprising a layer (38, 56, 62, 71) on a flexible substrate, the layer comprising a plurality of conductive islands (39, 57, 63), each island
25 being multiply connected to one or more other islands so as to form a conductive path across the substrate.

42. A device according to claim 41, wherein the islands are substantially hexagonally shaped.

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43. A device according to claim 41, wherein the islands are of a substantially quadrilateral shape.

44. A device according to any one of claims 41, 42 and 43, wherein the layer comprises a transparent conductor.

5 45. A device according to any one of claims 41 to 44, wherein the layer comprises a polymeric conductor.

46. A device according to any one of claims 41 to 44, comprising a further layer coated onto the layer.

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47. A device according to claim 46, wherein the further layer comprises a polymeric conductor.